

## BR. DEPT. NO.

## 3KQ

**F-09-003**

**R=REMOVED**

CITY/TOWN <b>FREETOWN</b>	B.I.N. <b>3KQ</b>	BR. DEPT. NO. <b>F-09-003</b>	8.-STRUCTURE NO. <b>F09003-3KQ-MUN-NBI</b>	INSPECTION DATE <b>JAN 4, 2008</b>
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## REMARKS

### **BRIDGE ORIENTATION**

ST 79 Elm Street has an east/west orientation. The bridge is in the tidal zone and the Assonet River flows from north to south.

### **ITEM 59 - SUPERSTRUCTURE**

#### **Item 59.1 - Arch/Arch Ring**

#### **S/A Deficiency:**

There are many cracked stones and voids throughout, as well as some hanging stones. At the time of this inspection there were many icicles in all three arches. All of the arch rings appear unchanged from previous photos. The west and middle rings at the north have cracked and broken stones and do not have a uniform radius with some flattening at the top.

The voids considered significant were previously painted. They were photographed for comparison with previous reports and for future inspections. These voids appear unchanged. Voids considered less significant were also painted so that they will not be mistaken for new voids in the future.

See the Photos for the following conditions:

The north ends of all three arches are sagging 6 inches +/- with water dripping. The north side of the roadway above is settling and uneven, contributing unwanted vibration and impact loading in this area (Photo 1).

The sag in the west arch starts at a void 10 feet in from the north and continues to the arch ring. The middle arch sag has several 2ft deep voids that expose the gravel fill (Photo 15). There are freshly fallen fines and stones up to about 2in diameter in the stream bed under these voids. This sag extends 15 feet into the barrel and is under a settling patch in the wearing surface.

The sag in the east arch extends 12 feet in from the face of the arch ring and has 26in deep voids, also exposing the gravel fill (Photo 23). There are freshly fallen fines and stones up to about 2in diameter in the stream bed under these voids as well.

There is a large void with up to 2ft penetration under, and behind the arch ring at the SE. Water flows through this void around a stone in the bottom corner of the arch. Above it there is a partially failed, cracked, and crushed stone with point loading. This stone is in the arch ring and is below an arch ring stone that is cantilevered above a void. See Photos 26 - 28.

**Note:** Due to a camera malfunction, the photo taken of the void shown in Photo 11, Page 9, is not available. The photo from the previous inspection was included in this report for future comparison. There were no changes to this void.

#### **Photo Log**

- Photo 1 : Cracks, ruts, settling, and patched area, north side over middle barrel
- Photo 2 : North elevation
- Photo 3 : West arch, north end
- Photo 4 : West arch looking south
- Photo 5 : West arch, north arch ring: Cracks in two stones
- Photo 6 : West arch, north arch ring: Cracked and broken stones
- Photo 7 : West arch at apex, 10-11ft from north at beginning of sag: Void 1ft x 6in x 16in D
- Photo 8 : West arch at apex, 16-17ft from north: Void up to 1.5ft x 6in x 1.5ft D
- Photo 9 : Void with fractured stone 2ft west of void in Photo 8: 1ft by 7in by 15in deep
- Photo 10 : Voids shown in Photos 8 and 9
- Photo 11 : Void with fractured stone 7ft from south end of west arch, 10in by 6in by 2ft deep (Photo from 10/07 inspection - no change)
- Photo 12 : Middle arch looking north
- Photo 13 : Middle arch looking south

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## REMARKS

### Photo Log (Cont'd)

- Photo 14 : Middle arch , north arch ring stones cracked at east; protruding stone inside of arch
- Photo 15 : Top of middle arch under settled area shown in Photo 1
- Photo 16 : Void with fractured stone, apex of middle arch, 14ft from north, 1.5ft by 7in by 1.5ft deep
- Photo 17 : Middle arch, 15ft from south, 7ft up west wall: Void up to 1.5ft x 1.5ft x 16in D
- Photo 18 : Middle arch, 4ft up east side, 12ft from south: Void 2ft L x 14in W x 1.5ft D
- Photo 19 : South end of middle arch, 5ft up east side: Void with crumbling stones
- Photo 20 : Void shown in previous photo
- Photo 21 : East arch at north
- Photo 22 : East arch looking south
- Photo 23 : 26in deep voids exposing gravel fill at apex of east arch, 5ft from north in sagged area
- Photo 24 : East arch looking north
- Photo 25 : East arch at southwest: Void 20in L x 1ft W x 16in D
- Photo 26 : East arch at SE: Void at bottom of arch ring/breastwall/wingwall interface 32in L x 22in H x 18in D with crushed stone
- Photo 27 : Close-up of cracked and crushed stone above void
- Photo 28 : East arch at SE: Bottom of arch ring with crushed stone above void with 2ft penetration, and under cantilevered stone

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**PHOTOS**

**Photo 1: Cracks, ruts, settling, and patched area, north side over middle barrel**



**Photo 2: North elevation**



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**PHOTOS**

**Photo 3: West arch, north end**



**Photo 4: West arch looking south**



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**PHOTOS**

**Photo 5: West arch, north arch ring: Cracks in two stones**



**Photo 6: West arch, north arch ring: Cracked and broken stones**



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**PHOTOS**

**Photo 7:** West arch at apex, 10-11ft from north at beginning of sag: Void 1ft x 6in x 16in D



**Photo 8:** West arch at apex, 16-17ft from north: Void up to 1.5ft x 6in x 1.5ft D



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**PHOTOS**

**Photo 9:** Void with fractured stone 2ft west of void in Photo 8: 1ft by 7in by 15in deep



**Photo 10:** Voids shown in Photos 8 and 9



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**PHOTOS**

**Photo 11: Void with fractured stone 7ft from south end of west arch, 10in by 6in by 2ft deep (Photo from 10/07 inspection - no change)**



**Photo 12: Middle arch looking north**



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**PHOTOS**

**Photo 13: Middle arch looking south**



**Photo 14: Middle arch , north arch ring stones cracked at east; protruding stone inside of arch**



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**PHOTOS**

**Photo 15: Top of middle arch under settled area shown in Photo 1**



**Photo 16: Void with fractured stone, apex of middle arch, 14ft from north, 1.5ft by 7in by 1.5ft deep**



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**PHOTOS**

**Photo 17: Middle arch, 15ft from south, 7ft up west wall: Void up to 1.5ft x 1.5ft x 16in D**



**Photo 18: Middle arch, 4ft up east side, 12ft from south: Void 2ft L x 14in W x 1.5ft D**



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**PHOTOS**

**Photo 19: South end of middle arch, 5ft up east side: Void with crumbling stones**



**Photo 20: Void shown in previous photo**



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**PHOTOS**

**Photo 21: East arch at north**



**Photo 22: East arch looking south**



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**PHOTOS**

**Photo 23:** 26in deep voids exposing gravel fill at apex of east arch, 5ft from north in sagged area



**Photo 24:** East arch looking north



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**PHOTOS**

**Photo 25: East arch at southwest: Void 20in L x 1ft W x 16in D**



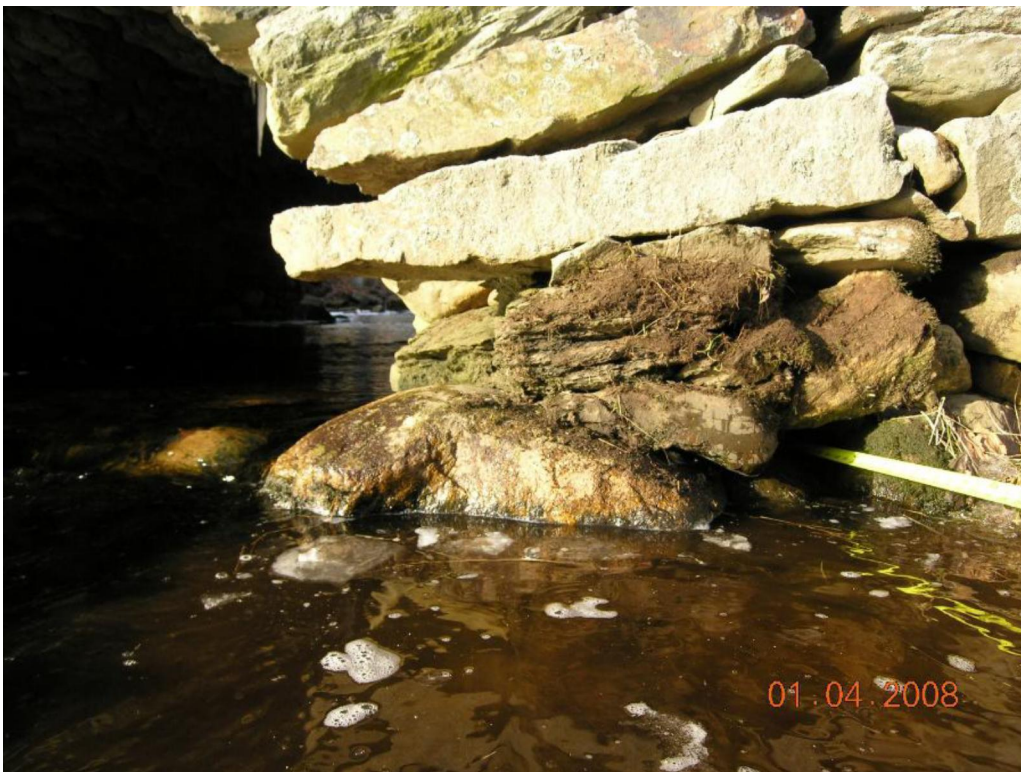
**Photo 26: East arch at SE: Void at bottom of arch ring/breastwall/wingwall interface 32in L x 22in H x 18in D with crushed stone**



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**PHOTOS**

**Photo 27: Close-up of cracked and crushed stone above void**



**Photo 28: East arch at SE: Bottom of arch ring with crushed stone above void with 2ft penetration, and under cantilevered stone**

State Information										Classification										Code																													
BDEPT#= F09003					Agency Br.No.					(112) NBIS Bridge Length										Y																													
Town= Freetown										(104) Highway System										N																													
B.I.N= 3KQ					AASHTO= 006.0					(26) Functional Class -					Urban Arterial					14																													
					FHWA Select List= Y					(100) Defense Highway										0																													
Identification					F090033KQMUNNBI					(101) Parallel Structure										N																													
(8) Structure Number					151000790					(102) Direction of Traffic -					2-way traffic					2																													
(5) Inventory Route					05					(103) Temporary Structure										N																													
(2) State Highway Department District					25240					(105) Federal Lands Highways										0																													
(3) County Code 005 (4) Place code										(110) Designated National Network										N																													
(6) Features Intersected					WATER ASSONET RIVER					(20) Toll -					On free road					3																													
(7) Facility Carried					ST 79 ELM ST					(21) Maintain -					Town Agency					03																													
(9) Location					.1 MI EAST OF ASSONET CTR					(22) Owner -					Town Agency					03																													
(11) Kilometerpoint					0004.892					(37) Historical Significance					potentially eligible					P																													
(12) Base Highway Network					Y					Condition										Code																													
(13) LRS Inventory Route & Subroute					000000000000					(58) Deck										N																													
(16) Latitude					41 DEG 47 MIN 43.79 SEC					(59) Superstructure										3																													
(17) Longitude					71 DEG 03 MIN 58.47 SEC					(60) Substructure										5																													
(98) Border Bridge State Code					Share %					(61) Channel & Channel Protection										7																													
(99) Border Bridge Structure No. #										(62) Culverts										N																													
Structure Type and Material										Load Rating and Posting										Code																													
(43) Structure Type Main: Masonry					Code 811					(31) Design Load -					Other/Unknown					0																													
Arch - Deck					Jointless bridge type: Not applicable					(63) Operating Rating Method -					Load Factor (LF)					1																													
(44) Structure Type Appr:										(64) Operating Rating										05.4																													
Other					Code 000					(65) Inventory Rating Method -					Load Factor (LF)					1																													
(45) Number of spans in main unit					003					(66) Inventory Rating										05.4																													
(46) Number of approach spans					0000					(70) Bridge Posting										0																													
(107) Deck Structure Type -					Not applicable					Code N					(41) Structure -					Posted for load					P																								
(108) Wearing Surface / Protective System:										Appraisal										Code																													
A) Type of wearing surface -					Not applicable=no deck					Code N					(67) Structural Evaluation										3																								
B) Type of membrane -					Not applicable=no deck					Code N					(68) Deck Geometry										2																								
C) Type of deck protection -					Not applicable=no deck					Code N					(69) Underclearances, vert. and horiz.										N																								
Age and Service										(71) Waterway adequacy										9																													
(27) Year Built					1822					(72) Approach Roadway Alignment										5																													
(106) Year Reconstructed					0000					(36) Traffic Safety Features					0 N 0 N					N																													
(42) Type of Service: On -					Highway-Ped					(113) Scour Critical Bridges										U																													
Under -					Waterway					Code 55					Inspections																																		
(28) Lanes: On Structure					02					Under structure					00					(90) Inspection Date					10/04/06					(91) Frequency	03					MO													
(29) Average Daily Traffic					023000															(92) Critical Feature Inspection:					(93) CFI DATE																								
(30) Year of ADT					2006 (109) Truck ADT					08 %					(A) Fracture Critical Detail					N 00					MO A)					00/00/00																			
(19) Bypass, detour length					003 KM										(B) Underwater Inspection					N 00					MO B)					11/01/83																			
Geometric Data															(C) Other Special Inspection					Y 03					MO C)					01/04/08																			
(48) Length of maximum span					0004.0 M										(*) Other Inspection (Flood insp)					N 00					MO *)					10/18/05																			
(49) Structure Length					00013.7 M										(*) Closed Bridge					N 00					MO *)					00/00/00																			
(50) Curb or sidewalk:					Left 00.0 M					Right 01.2 M					(*) UW Special Inspection					N 00					MO *)					00/00/00																			
(51) Bridge Roadway Width Curb to Curb					007.5 M										(*) Damage Inspection										MO *)					00/00/00																			
(52) Deck Width Out to Out					010.0 M										Rating Loads					Report Date					12/01/06					H20					Type 3					Type 3S2					Type HS				
(32) Approach Roadway Width (w/shoulders)					007.6 M										Operating					6.0					6.0					6.0					6.0														
(33) Bridge Median -					No median					Code 0					Inventory					6.0					6.0					6.0					6.0														
(34) Skew					00 DEG					(35) Structure Flared					N					Field Posting																													
(10) Inventory Route MIN Vert Clear					99.99 M										Status					POSTED					Posting Date					02/06/07																			
(47) Inventory Route Total Horiz Clear					07.5 M										2 Axle					3 Axle					5 Axle																								
(53) Min Vert Clear Over Bridge Rdwy					99.99 M										Actual					06					06					06																			
(54) Min Vert Underclear ref					N					00.00 M					Recommended					06					06					06																			
(55) Min Lat Underclear RT ref					N					00.0 M					Missing Signs					N																													
(56) Min Lat Underclear LT					00.0 M										Misc.																																		
Navigation Data										Bridge Name					N Anti-missile fence					N Acrow Panel					N Jointless Bridge																								
(38) Navigation Control -					No navigation control on waterway					Code 0					Freeze/Thaw					N : Not Applicable																													
(111) Pier Protection					Code										Accessibility (Needed/Used)																																		
(39) Navigation Vertical Clearance					000.0 M										N / N					Liftbucket					N / N					Rigging					Inspection														
(116) Vert-lift Bridge Nav Min Vert Clear					M										N / N					Ladder					N / N					Staging					Hours:					008									
(40) Navigation Horizontal Clearance					0000.0 M										N / N					Boat					N / N					Traffic Control																			
															Y / Y					Wader					N / N					RR Flagperson																			
															N / N					Inspector 50					N / N					Police																			